

Schedule for the Workshop "Physics and Mathematics of Growing Interfaces"

Monday

8:00-8:50 Robert Ecke, Mark Mineev, Sam Howison Introductory remarks

Stochastic Laplacian Growth (DLA)

9:00-9:55 Thomas Halsey Diffusion-Limited Aggregation: An Overview
10:00-10:30 Coffee break
10:30-11:25 Leonard Sander Random walks, diffusion limited aggregation in a wedge,
and average conformal maps
11:30-12:30 Discussions

Stochastic Laplacian Growth (Loewner Evolution and Random Matrices)

2:00-2:55 Ilya Gruzberg Stochastic dynamics of conformal maps: from critical
phenomena to stochastic growth
3:00-3:55 Anton Zabrodin Integrability of Laplacian growth, random matrices, and
the Loewner equation
4:00-4:30 Coffee break
4:30-5:30 Discussions
6:00-8:00 Poster Session (and reception)

Tuesday

Fracture Dynamics and Related Problems

8:00-8:55	James Langer	Theory of Large Deformations in Amorphous Solids: Why Structural Engineers May Need New Ideas in Nonequilibrium Physics.
9:00-9:25	Jay Fineberg	Universality and hysteretic dynamics in dynamic fracture: The rapid fracture of brittle gels
9:30-9:55	Vincent Hakim	Phase-field description of brittle fracture and laws of crack motion
10:00-10:30	Coffee break	
10:30-10:55	Itamar Procaccia	Statistical Physics of Rough Fracture Interfaces
11:00-11:25	Vladimir Entov	On fracture and breakup of fluids
11:30-12:30	Discussions	

Advances in Integrability of Free Boundaries

2:00-2:25	Alexandre Abanov	Quantum hydrodynamics in one dimension. Quantizing deep water waves.
2:30-2:55	Paul Wiegmann	Quantum Shock Waves: Hydrodynamics instabilities in coherent quantum systems
3:00-3:55	Darren Crowdy	Integrability in fluid dynamics
4:00-4:30	Coffee break	
4:30-5:30	Discussions	
6:00-8:00	Poster Session (and reception)	

Wednesday

Free Boundaries and Some Advances in Nonequilibrium Physics

- 8:00-8:25 Raymond Goldstein Stalactite Growth as a Free Boundary Problem
- 8:30-8:55 David Kessler Fluctuation-regularized Front Propagation Dynamics in a Reaction-Diffusion System
- 9:00-9:25 James Langer Dynamics and Thermodynamics of the Glass Transition
- 9:30-10:00 Coffee break
- 10:00-10:25 Boris Spivak Transport in Two Dimensional Electronic Micro-emulsions
- 10:30-10:55 Benny Davidovich Patterns on eroded solids: continuum dynamics of ion sputtered surfaces
- 11:00-11:25 Thomas Frisch Instability and growth on a vicinal surface: application to $Si(001)$
- 11:30-12:30 Discussions

Laplacian Growth in a Hele-Shaw cell (Selection)

- 2:00-2:55 Mitchell Feigenbaum Saffman-Taylor Selection and Remote Boundary conditions
- 3:00-3:25 Herbert Levine Microscopic Selection of Viscous Fingers
- 3:30-3:55 Matthew Thrasher Fjords in viscous fingering: selection of width and opening angle
- 4:00-4:30 Coffee break

Laplacian Growth in a Hele-Shaw cell (near a Cusp)

- 4:30-4:55 Eldad Bettelheim Integrability in the viscous fingering problem
- 5:00-5:25 Oded Agam Tip-splitting evolution in the idealized Saffman-Taylor problem
- 5:30-6:30 Discussions
- 7:30 Banquet

Thursday

Laplacian Dynamics in a Hele-Shaw cell (Continuation)

- 8:00-8:25 Ute Ebert An analytically solvable regularized moving boundary problem motivated by spark evolution
- 8:30-8:55 Baruch Meerson Scaling and self-similarity in an unforced Hele-Shaw flow

Laplacian Growth and Related Mathematics

- 9:00-9:55 Bjorn Gustafsson Laplacian growth and potential theory.
- 10:00-10:30 Coffee break
- 10:30-10:55 Mihaj Putinar Quadrature domains as extremal solutions of a moment problem
- 11:00-11:25 Igor Loutsenko The Variable Coefficient Hele-Shaw, Integrability and Quadrature Identities
- 11:30-12:30 Discussions

Laplacian Growth and Related Mathematics (Continuation)

- 2:00-2:25 Sam Howison The two-phase Hele-Shaw (Muskat) problem

Ideal Fluid Surfaces

- 2:30-2:55 J Raymond Ristorcelli Initial Condition Dependence of RT Turbulence
- 3:00-3:25 Daniel Livescu Surface dynamics in buoyancy-driven homogeneous variable density turbulence
- 3:30-3:55 Peter Vorobjeff Mixing interface evolution in a 2D simulation of Richtmyer-Meshkov instability
- 4:00-4:30 Coffee break
- 4:30-4:55 Balu Balasubramaniam Shock-induced interfacial mixing. Part I. Analysis and evolution of re-shocked interfaces
- 5:00-5:25 Chris Tomkins Shock-induced interfacial mixing. Part II. Planar velocity and scalar concentration measurements
- 5:30-6:30 Discussions

Friday

Random Matrices, Quantum Gravity, and Riemann-Hilbert Problem

- 8:00-8:55 Andrei Mironov Gravity at small distances
9:00-9:25 TBA
9:30-9:55 Vladimir Kazakov Double Scaling and Finite Size Corrections in $sl(2)$ Spin Chain
10:00-10:30 Coffee break
10:30-10:55 Yuri Antipov Riemann-Hilbert problem on Riemann surfaces in elasticity
11:00-11:25 Alexandre Orlov Integrable Systems and Random Processes
11:30-12:30 Discussions

Growth of Biological Forms

- 2:00-2:55 Martine Ben Amar Growth and Elasticity of Soft Tissues
3:00-3:25 Eran Sharon Shaping Thin Sheets and the Geometry of Wavy Leaves
3:30-3:55 John King Moving boundary problems in biological tissue growth
4:00-4:30 Coffee break
4:30-4:55 Linda Cummings Lipid raft formation: Experiments and mathematical modelling
5:00-6:00 Discussions